

REMARKS

Claims 14-35 were pending in the application prior to the outstanding Office Action. The Examiner has indicated that applicants are required to cancel non-elected claims 1-13 in the response to this Office Action. Accordingly, claims 1-13 are cancelled. Applicant has also cancelled claims 19 and 27-29. With this Amendment, claims 14-18, 20-26 and 30-35 remain pending in this application.

The Examiner has rejected claims 31-35 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. In addition, claims 14-30 were rejected under 35 U.S.C. §102(e) as being anticipated by Call (US 6,418,441 - filed 07/2000, which is a division of Application No. 09/316,597, filed on May 21, 1999). The Examiner has also rejected claims 31-35 under 35 U.S.C. §103(a) as being unpatentable over Call.

Report of Attempted Interview

In late March 2006, the Examiner provided by fax an indication of potentially allowable subject matter for discussion. When we followed up by telephone on or about April 25, she was preparing to leave the country on an extended vacation, so we were unable to discuss the reasoning behind her fax.

We discussed conducting a three-way interview following her return. A formal request for interview accompanies this response.

Technology Tutorial

Have you ever tried, for a minute or two, to listen to programmers enthusiastically talking in abstractions about a new, unfamiliar programming construct? They might as well be speaking a foreign language. Even the familiar sounding words are used in a different way to fashion a new abstraction.

The technology tutorial that follows contrasts this disclosure to the brief passage in the Call reference that mentions RDF technology. We resort to using the "Resource Description Framework (RDF) and Syntex Specification" cited by Call to help us understand his passing reference to RDF in column 25 of a 33-column specification. Otherwise, we could not make sense of Call.

-- The Disclosed Technology

Much electronic commerce is conducted by Web Service modules that exchange XML documents. XML documents differ from prior technologies because they are parseable, field tagged documents. Well-formed XML documents typically are validated against a schema. Several schema languages have competed for adoption. Most competing schema languages offer new features not found in prior XML schema languages.

Applicants have disclosed technology useful for evolution of schemas, as industry faces the inevitable customization and versioning of XML documents. "Schema evolution" is in the title of the application. On page 27, safe extension and evolution of schema elements is described as an application of the disclosed technology.

The disclosed technology includes ways of extending an element of an original schema and thereby extending a document defined by the schema, without editing the original schema and without breaking applications that depend on the original schema. It is illustrated as an extension of the SOX schema definition language promoted by Commerce One, the company to which this application was originally assigned.

Pages 14-15 of the application illustrate one embodiment of extending an element in a document, using an extended XML schema. In this illustration, an <Address> element of a PurchaseOrder document defined by the schema PurchaseOrder.sox is extended by creating a new element <Contact> which is defined in the supplemental schema ContactAddress.sox. Use of the supplemental schema allows a business to substitute the <Contact> element in place of the <Address> element in a PurchaseOrder document and still have a well-formed and valid document. That is, the supplemental schema allows omission of <Address> and substitution of <Contact> in its place, even if the PurchaseOrder.sox schema makes <Address> a mandatory element for every PurchaseOrder document. Because the illustration on pp. 14-15 is a concrete example of concepts that we will discuss throughout this paper, we reproduce it below:

Suppose that <Address> is utilized by document instances of type *PurchaseOrder* and that a particular trading partner ACME wishes to make a simple extension to the <Address> element used in *PurchaseOrder.sox* 200. In particular, ACME wishes to extend the *PurchaseOrder.sox* 200

schema to allow the <Address> element to contain telephone numbers. As illustrated below, the present invention enables such an extension of the <Address> tag; the polymorphism feature allows the extended <Address> tag to be used in instance documents of type *PurchaseOrder*, while preserving the integrity of the *PurchaseOrder.sox* schema and the existing instance documents of that type.

The <Address> tag may be extended by using the SOX schema language to create a small document type *ContactAddress*, whose corresponding schema *ContactAddress.sox* 204 extends the CBL.sox 216 definition of <Address> to include a telephone number. The 20 extended tag, or element, is referred to as <Contact>, and this element is defined in *ContactAddress.sox*, which is given as follows:

```
<schema uri = "ContactAddress.sox">
  <namespace prefix = "CBL" uri = "CBL.sox"/>
  <elementtype name = "Contact">
    <extends prefix = "CBL" type = "Address">
      <append>
        <element type = "PhoneNumber" occurs = "*" />
      </append>
    </extend>
  </elementtype>
</schema>
```

The new document type *ContactAddress* includes an identifier 206 for CBL.sox 216. A document instance 208 of type *PurchaseOrder* incorporates the new <Contact> tag by import statements which reference the schemas *ContactAddress.sox* 204 and CBL.sox 216 respectively. Note that the <Contact> tag may be used in any place in the document instance reserved for the original <Address> tag.

From this example, one sees that the supplemental schema overrides selected elements of the original schema, supporting modification of the original document definition (e.g., for a *PurchaseOrder*) by referencing the supplemental schema, without any need to edit, update or modify the original schema.

-- *The RDF Technology*

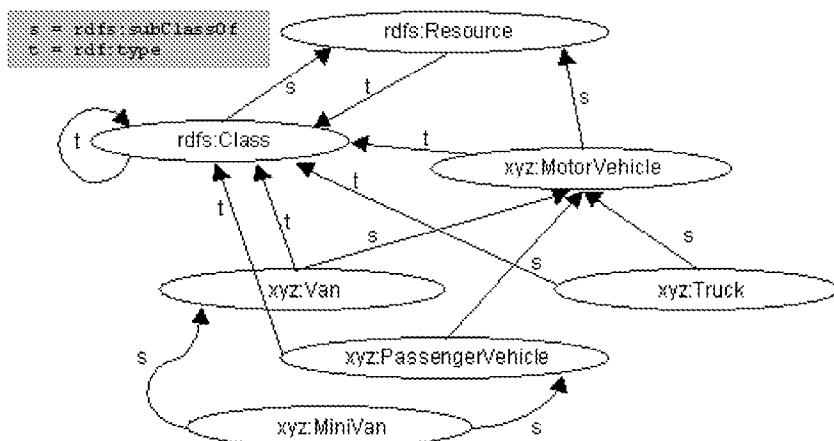
Column 25 of Call inadequately summarizes W3C's RDF technology. The 55 lines regarding use of RDF to support Call's invention fall short of a written description, teaching or enablement of RDF. One of skill in the art would read Call, search the web for the referenced "Resource Description Framework (RDF) and Syntax [sic] Specification" (Feb 22, 1999) (hereinafter "Model and Syntax Specification"), and then work from the original source document, because the Call passage is too brief to teach us about RDF.

We found the referenced document at <http://www.w3.org/TR/1999/REC-rdf-syntax-19990222/>, and are submitting it under cover of an IDS for the Examiner to review, along with the companion “Resource Description Framework (RDF) Schema Specification” (hereinafter “*Schema Specification*”) from <http://www.w3.org/TR/1998/WD-rdf-schema/> and chapter 16 of Kenneth B. Sall, XML Family of Specifications, A Practical Guide (May, 2002). Hopefully, this combination of materials explaining RDF will demonstrate how one of skill in the art would understand the RDF framework to which Call refers.

RDF relates to the Semantic Web and was developed as part of the W3C Semantic Web Activity. “The Semantic Web aspires to ... associat[e] formal meaning with the linkages” between Web documents. Sall, p. 1030. The desire is to provide something more powerful than keywords for understanding the linkages among Web documents. *Id.*

RDF is a language that describes graphs. See, Resource Description Framework (RDF): Concepts and Abstract Syntax, § 3.1 Graph Data Model (W3C working draft Jan. 23, 2003 – not a prior art publication), viewed at <http://www.w3.org/TR/2003/WD-rdf-concepts-20030123/#section-Concepts> on August 30, 2006 (hereinafter “*RDF Concepts*”); RDF Model Theory, § 3.1 RDF Interpretations, Figure 2: An example of an rdf-interpretation (W3C working draft Apr. 29, 2002) viewed at <http://www.w3.org/TR/2002/WD-rdf-mt-20020429/> on August 30, 2006 (hereinafter “*RDF Model Theory*”). For reference, LISP is another language, sometimes favored for artificial intelligence projects, that describe graphs. A paper that uses LISP syntax and John McCarthy’s early AI work as an introduction to RDF explains, “The defining characteristic of an RDF notation is then that it can be parsed into data whose structure properly mirrors the purely mathematical abstraction which ‘is’ RDF”. Pat Hayes, RDF graph syntax, at §§ 1-2 (undated web page) viewed at <http://www.ihmc.us/users/phayes/RDFGraphSyntax.html> on August 30, 2006.

An example of an RDF graph is provided in *RDF Schema Specification*, § 2.3.2.1 and reproduced below.

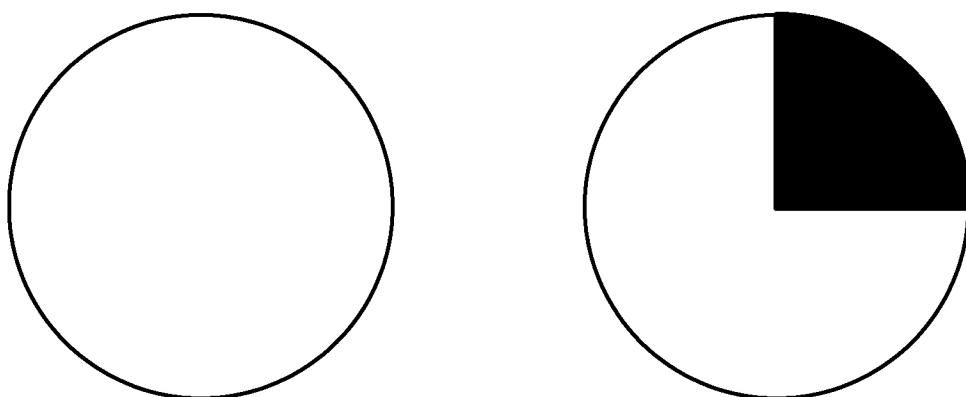


"This is a very simple example that expresses the following class hierarchy. We first define a class 'MotorVehicle'. We then define 3 subclasses of 'MotorVehicle', namely 'PassengerVehicle', 'Truck' and 'Van'. We then define a class 'Minivan' which is a sub-class of both 'Van' and 'PassengerVehicle'." *Id.* A class hierarchy is, of course, a graph.

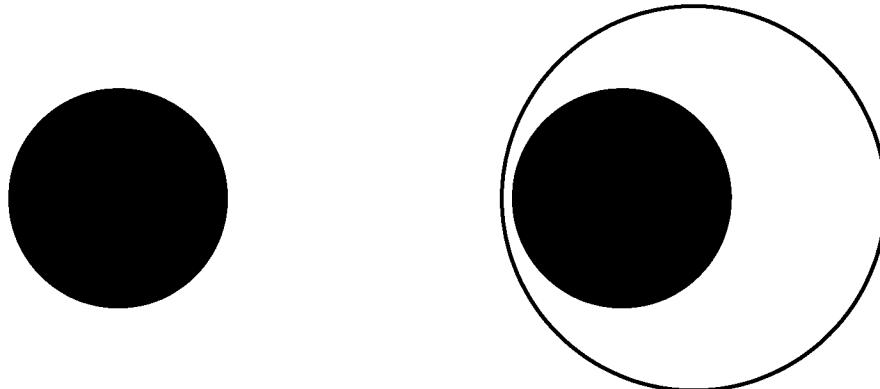
-- *Contrasting a Description of Classes and Subclasses with this Disclosure*

Venn diagrams can be used to contrast RDF technology with the disclosed technology. RDF subdivides a class when a subclass is defined. This disclosure extends a set of data elements by adding more data elements.

The two circles below illustrate a class on the left, and a subclass as a shaded wedge on the right. The subclass is a subset of the class and entirely contained in the class. It refines the class. The definition of a class is sometimes said to be extended by a subclass definition. "Extend" in this context means refine from general to specific.



The concentric circles below illustrate extending a set of data elements by adding additional elements to create a superset. The original data elements are illustrated by the smaller shaded circle and the extended set of data elements by the larger, unshaded circle.



Applied to the example quoted above from this disclosure, a set of data elements known as <Address> can be extended by adding a telephone number and creating a superset of data elements known as <ContactAddress>. The superset of elements extends the original set and is renamed. The extended superset includes everything in the original set.

With this technology tutorial in mind, we turn to the grounds of rejection.

Rejections under 35 U.S.C. §112, second paragraph, of Claims 31-35

The Examiner has rejected claims 31-35 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. We have amended claim 31 as suggested to overcome the rejection. The Examiner's suggestion is noted with appreciation.

Rejections under 35 U.S.C. §102(e) of Claims 14-30

The Examiner has rejected claims 14-30 under 35 U.S.C. §102(e) as being anticipated by Call (US 6,418,441 - filed 07/2000, which is a division of Application No. 09/316,597, filed on May 21, 1999).

Claim 14: As explained above, Call uses "extending" to refer to defining subclasses (subsets) of classes. This claim uses "extending a definition of a first tag" in a way that creates supersets of elements used in the first tag.

The Examiner's analysis on pages 7-8, sections (i) and (ii), is consistent with our description of the Call and this disclosure. The Examiner correctly describes subclasses, "e.g., [as] more particular kinds of products". The classes and subclasses that the Examiner uses as examples are publications/magazines, software/video games, foods/cereals and clothing/shirts. This matches our circle with a shaded wedge illustration above.

Claim 14 combines elements in a way that extends a first tag, which is a compound data element, to create a second tag that includes the data elements of the first tag and additional data elements. Applicants believe that this is not what subclasses do for classes.

Therefore, claim 14 should be allowed over Call.

Claims 15 and 17-18 depend from claim 14 and should be allowed over Call for at least the same reasons as claim 14.

Claim 16: It does not appear to us that the RDF documentation supports the Examiner's notion that "magazines" can be inserted into a location reserved for "publications." The two are not interchangeable in RDF, because magazines is a subset, not a superset of publications. Call does not teach that they are interchangeable in the cited passage; we assume that the Examiner is arguing from some general principle that is not explained by Call.

Therefore, claim 16 should be allowed over Call.

Claim 20 involves a second document, such as a response to a purchase order, which may use a second tag to encompass information from the first document plus additional information. Increasingly elaborate RDF schemas do not create supersets of information and therefore do not read on claim 20.

Claim 20 should be allowed over Call.

Claims 21-24 depend from claim 20 and should be allowable over Call for at least the same reasons as claim 20.

Claim 25 is a means-plus-function claim that describes a computer network system for processing a document instance of a markup language. This computer system comprises the following elements: a means for defining a first schema in the computer network system; a means for extending a definition of an element in the first

schema by use of a second schema residing on the computer network system; and a means for importing the second schema into the document instance. Each of the elements of claim 25 is in means-plus-function form, the means including data structures in memory of a computer network system for processing a document instance. The structures corresponding to means for defining a first schema include an enhanced schema language, described on pp. 13 *et seq.* of the specification. See, FIG. 2. The structures corresponding to means for extending a definition of an element include the extends statement illustrated in the example on pp. 14-15. See, FIG. 2, ref 204. The structures corresponding to means for importing the second schema into the document instance include URNs, URLs and URIs directly or indirectly specified in an XML document, as illustrated on pp. 22-25. See, FIG. 2, ref 212, 214. Alternatively, the means include a processor responsive to data structures specifying definitions, extensions and imports.

In the Office Action, the Examiner did not compare the reference to the structures that we paired with the functions in our Appeal Briefs. Because the Examiner ignored the structures, she failed to make out a *prima facie* case in the terms required by case law and explained in MPEP § 2183.

In addition, the amended claim 25 includes many of the limitations of claim 14 and should be allowable for the reasons given above.

Therefore, claim 25 should be allowable over Call.

Claims 26 and 30 depend from claim 25 and should be allowable for at least the same reasons as claim 25.

Applicants respectfully submit that claims 14-18, 20-26 and 30 should be allowable over Call.

Rejections under 35 U.S.C. §103(a) of Claims 31-35

The Examiner has rejected claims 31-35 under 35 U.S.C. §103(a) as being unpatentable over Call (US 6,418,441 - filed 07/2000, which is a division of Application No. 09/316,597, filed on May 21, 1999).

Claim 31 has been amended to expressly include limitations now found in claim 14. We do not see the claimed use of the second schema to be covered by an extending class with a subclass.

Further, the Examiner acknowledges that Call does not distribute the first and second schemas across different servers. (OA at 14.)

We do not understand the Examiner's argument for modifying call, that

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the teaching of Call to implement the feature above because Call's teaching would have provided the capability for facilitating the integration of data from retailers and other web page producers with the product information provided by manufacturers.

The Examiner does not cite any teaching or suggestion to modify Call as claimed. The outcome of cases decided even before *In re Lee* makes it clear that real evidence is required to support an asserted teaching, suggestion or motivation to modify a single reference as the Examiner proposes (OA 14). See, e.g., *In re Kotzab*, 217 F.3d 1365, 1369-70 (Fed. Cir. 2000) (rev'd finding of obviousness, as "Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference."); *Kolmes v. World Fibers Corp.*, 107 F.3d 1534, 1541 (Fed. Cir. 1997) (aff'd patent not invalid, as no suggestion to modify the '989 patent with regard to non-metallic fibers). The *Kolmes* case is particularly telling, given the relatively minor change to the reference, which was not proven to be suggested by the prior art. The lack of objective evidence of a suggestion or teaching to modify is good reason to reconsider this § 103(a) rejection.

Even the proposed modification of Call would not read on claim 31, as it still is an RDF implementation. Classes and subclasses stored on different servers would not read on claim 31, because the claim defines a different relationship between the first and second schemas than the class/subclass relationship.

Therefore, claim 31 should be allowable over Call, as the Examiner proposes to extend the reference.

Claims 32-35 should be allowable over Call from at least the same reasons as claim 31, from which they depend.

Applicants respectfully submit that claims 31-35 should be allowable over Call.

CONCLUSION

Applicants respectfully submit that the claims, as stated herein, are now in condition for allowance and solicit acceptance of the claims in light of these remarks. If the Examiner believes a telephone conference would aid in the prosecution of this case, a call to the undersigned would be appreciated.

The undersigned can ordinarily be reached at his office at (650) 712-0304 between 8:30 a.m. and 5:30 p.m. PST, Monday through Friday, and can be reached at his cell phone number at (415) 602-9112 most other times.

Fee Authorization. The Commissioner is hereby authorized to charge any additional fee determined to be due in connection with this communication, or credit any overpayment, to our Deposit Account No. 50-0869 (OIN 1012-1).

Respectfully submitted,

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